

REMARKS

Claims 1-20 are pending. Claims 1, 13 and 18 are amended, and new claims 19 and 20 are added with this response. The provisional allowance of claim 18 is noted with appreciation. Claim 18 has been amended into independent form, and is now believed to be in condition for allowance. New claims 19 and 20 contain the subject matter of previously depending and allowable claim 18, and thus are also believed to contain allowable subject matter for at least the same reasons. Reconsideration of the application is respectfully requested in view of the comments provided below.

I. REJECTION OF CLAIMS 1-6 AND 13-18 UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

Claims 1-6 and 13-18 were rejected under 35 U.S.C. § 112, second paragraph as being indefinite. Claims 1 and 13 have been amended to address the antecedent basis issue highlighted in the Office Action. Accordingly, withdrawal of the rejection is respectfully requested.

II. REJECTION OF CLAIMS 1-3, 6-9 AND 12-15 UNDER 35 U.S.C. § 103(a)

Claims 1-3, 6-9 and 12-15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,429,119 (Chao et al.) in view of U.S. Patent No. 6,458,689 (Yu et al.). Withdrawal of the rejection is respectfully requested for at least the following reasons.

- i. The combination of Chao et al. and Yu et al. is improper because the requisite motivation for the combination does not exist.*

It is conceded that prior art references may be combined together if one of ordinary skill in the art would be motivated to do so. Such motivation may be found in the references themselves, in the nature of the problem to be solved, or in the general knowledge of persons of ordinary skill in the art. MPEP § 2143.01. However, such motivation can not be vague or conclusory, but instead must be ***clear and particular***.

In re Dembiczak, 175 F.3d 994, 999 (Fed. Cir. 1999). It is respectfully submitted that upon an evaluation of the cited art as a whole in light of the above standard, the combination clearly is improper due to a lack of motivation for such a combination or modification.

Chao et al. teach a dual damascene fabrication process, wherein first and second dielectric layers 17, 19 are deposited *via* CVD. (See, e.g., Fig. 2, and Col. 7, line 57 – Col. 8, line 12). Chao et al. are silent regarding whether the dielectrics 17, 19 are planarized after deposition thereof. However, since a planarization step *via* CMP is discussed elsewhere in reference to the copper deposition in the completed trench (see, e.g., Col. 8, lines 60-63), it can be inferred that no planarization of the dielectric layers take place.

Yu et al. teach deposition and planarization of a dielectric layer 14. According to Yu et al., the CMP planarization of the dielectric layer causes micro-scratches 16 in a top surface thereof. (See, e.g., Abstract, Fig. 2, and Col. 4, lines 5-9). An ARC layer 20 is then deposited over the planarized dielectric to fill in the micro-scratches in the top portion of the dielectric prior to copper deposition into the trench. (See, e.g., Col. 4, lines 27-31).

As highlighted above, ***Chao et al. do not planarize the dielectric layers 17, 19 and thus no micro-scratches reside on the top surface thereof.*** Therefore one of ordinary skill in the art would not be motivated to modify Chao et al. in view of Yu et al. because the problem solved by the ARC layer in Yu et al. does not exist in Chao et al. Since no motivation exists for a modification of Chao et al. in view of Yu et al., the combination is improper.

- ii. The combination is further improper because a modification of Chao et al. in accordance with Yu et al. would render Chao et al. unsatisfactory for its intended purpose.***

Applicants further concede that the motivation for a modification of a primary reference can differ from that provided within the secondary reference. Therefore

under some circumstances the rationale for modifying Chao et al. in accordance with Yu et al. may be motivated for reasons other than the removal of micro-scratches. However, it is respectfully submitted that based upon the teaching of Chao et al., one would not be motivated to modify the primary reference in accordance with Yu et al. (*i.e.*, move formation of an anti-reflective coating from **after** formation of the first trench to **before** first trench formation) because doing so would render the Chao et al. unsatisfactory for an intended purpose thereof.

Chao et al. teach the deposition of an ARC layer (*e.g.*, SiON) 30 **after** a first trench 20 is formed. (See, *e.g.*, Col. 8, lines 33-44, and Fig. 3). ***The ARC layer 30 is deposited into the first trench to reduce etch stop layer facets from forming during subsequent formation of the second trench.*** *Id.* By moving formation of this liner 30 to **before** first trench formation as claimed, ***it would no longer operate to prevent the facets as intended.*** Since altering the order of the formation of the anti-reflective coating layer in Chao et al. would frustrate the purpose for which such layer is employed therein, no motivation to modify the reference in accordance with Yu et al. exists. Accordingly, such a modification is improper. MPEP § 2143.01 (V), In re Gordon, 733 F.2d 900 (Fed. Cir. 1984) (holding that if a proposed modification would render the prior art being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification). Accordingly, the claims are non-obvious and withdrawal of the rejection is respectfully requested.

III. REJECTION OF CLAIMS 4-5, 10-11 and 16-17 UNDER 35 U.S.C. § 103(a)

Claims 4-5, 10-11 and 16-17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Chao et al. and Yu et al, and further in view of U.S. Patent No. 6,475,929 (Gabriel et al.). Withdrawal of the rejection is respectfully requested for at least the following reasons.

As highlighted above, the combination of Chao et al. and Yu et al. is improper because the requisite motivation for combining together the references does not exist. Gabriel et al. fail to remedy the deficiencies in the primary references, and thus claims

4-5, 10-11 and 16-17 are also non-obvious. Accordingly, withdrawal of the rejection is respectfully requested.


IV. CONCLUSION

For at least the above reasons, the claims currently under consideration are believed to be in condition for allowance.

Should the Examiner feel that a telephone interview would be helpful to facilitate favorable prosecution of the above-identified application, the Examiner is invited to contact the undersigned at the telephone number provided below.

Should any fees be due as a result of the filing of this response, the Commissioner is hereby authorized to charge the Deposit Account Number 20-0668, TI-31505A.

Respectfully submitted,
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CERTIFICATE OF MAILING (37 CFR 1.8a)

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop Amendment, Assistant Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Date: March 8, 2006


Christine Gillroy